## OVERVIEW OF MATCHIIM

http://hlunix.hl.state.ut.us/MatCHIIM/measures

The MatCHIIM system is a web-based Maternal and Child Health (MCH) executive data management and outcome reporting system. Creating a data system such as MatCHIIM requires coordination from several agencies. This system currently uses records from major surveillance systems, including vital records, hospital discharge, and population estimates. Users may create queries by selecting options which are available through a simple request format. The query system is built upon a framework that encompasses Title V indicators, and it allows its users to create customized reports on various indicators at the state level and sub-state levels. Reports are produced in either table or graphic format. While the data sets used to create these queries reside on different platforms, they function as though they exist in a single file. The only file that actually uses physically linked data was created from infant death file and birth file.

The modules also contain more discursive information. Web pages on health system capacity, state and national comparisons, and risk and protective factors are included in each module. The MatCHIIM system provides data that assists policy makers and health care professionals in making accurate assessments of the health status of a population.

## SYSTEM REQUIREMENTS

**Hardware and Software**:

Option I: Any UNIX machine (HP, SUN, DEC, 5) and SAS as the data engine

Option II: High-end PC workstation (preferably 128 M MEN and 9 GB HD+ dual processors), Microsoft NT server, or SAS as data engine

**Personnel Skills**

Personnel involved with MatCHIIM must have a solid understanding of the configuration of an NT server or UNIX operating system, and knowledge of SAS.

**Is MatCHIIM a web-based MCH system that links a number of disparate systems through a common user interface?**

Yes. Infant deaths and birth records in Utah are linked into one file. Other data sets are stored separately but users access them from one Web site. It appears to the user as though these records are stored in one file.

**What types of modules are available on MatCHIIM at this time?**

MatCHIIM currently has six modules on-line that deal strictly with reproductive issues: Fertility; Low Birth Weight; Cesarean-Section Births; Teen Births; and Infant Mortality, and Adequacy of Prenatal Care. Supplemental modules

regarding unintentional injuries are also included on the MatCHIIM web site.

These modules are dedicated to other MCH performance measures and bring an additional dimension to assessment of the health status of the population.

**Which databases are currently linked through the MatCHIIM interface?**

Currently, the Utah Web site combines files from birth records, death records, inpatient hospital discharge, and population estimates. A file linking Medicaid-eligible mothers to birth records is being created and will be available on the Intranet. At this time, the availability of this file is limited to the Department's Intranet system. Political issues within the Medicaid Program must be resolved before this file is made available for publication on the Internet.

Incorporating other data sets into the MatCHIIM system is an ongoing project. One example of the possibility for incorporating data sets involves the the WIC (Women, Infants and Children) data set. Records for WIC participants (from birth to five years of age) have already been linked to the Utah Immunization Registry. The immunization registry resides in another platform (Oracle database), and is only used internally because the records are incomplete. A web component for this registry is under construction. When the data are ready for publication, it will be decided whether to incorporate this database into the MatCHIIM system or to develop a separate web site using the Oracle database. Both approaches have trade-offs.

**Will MatCHIIM link databases such as WIC, lead screening, newborn hearing screening to the immunization registries?**

Linking multiple data sets has been within the vision of Dr. Scott D. Williams, the Utah Department of Health Deputy Director, as well as the Department's Intranet Steering Committee, for several years. The Utah Health Department is scheduling two strategic planning meetings to be held on October 29, 1999, and November 19, 1999. MatCHIIM has been a pilot project for large scale integration efforts such as these.

**Will MatCHIIM allow for matching individual records?**

System integration has many aspects and components. The ultimate objective of MatCHIIM is to create output which presents integrated information at an aggregate level, instead of being a client-level system. The MatCHIIM program is not designed to work as a tool to provide individual-based information.

The MatCHIIM software links aggregate information from different data sets. For example, when the user requests the crude birth rate in a query (calculated as number of births divided by total population), the numerator is drawn from the birth records file and the denominator is drawn from the estimated population data. This system allows users to examine the indicators within various levels of the population. While both data sets reside in different platforms, the output is based on the on-the-fly linked information.

MatCHIIM software is not designed to link individual records. Prior to being incorporated into the MatCHIIM system, files that require matching or linking of individual records are created using AutoMatch software. The files are then brought over into the MatCHIIM system without any identifying individual records.

## How is MatCHIIM similar to and different from data warehousing?

MatCHIIM is not a data warehouse, in the technical sense of the definition; however, it is intended to be a comprehensive and integrated reporting system. Technology is not a barrier to expansion of the MatCHIIM system.

## How can this "cross-pollination" process accelerate the advancement of registries?

In terms of technology, MatCHIIM and registries are two different types of systems. But people build systems. In many states, (e.g., Utah, Nevada, and Maryland), the same groups of people work on both systems. It would be very effective and cost-saving (in terms of both personnel as well as in terms of hardware and software costs) if the development of both systems were guided by a strategic plan of integrated systems.

The MatCHIIM project management method is also a state-to-state technological assistance model. The "spirit" of MatCHIIM points toward the networking approaching that may help state registries collaborate. The linkage of MatCHIIM and registries would require cooperation among different agencies and integration of plans.

## What is the connection between MatCHIIM and INPHO?

MatCHIIM was initially sponsored by HRSA for the state of Utah. The states participating in MatCHIIM are working with INPHO states. This creates an atmosphere of mutual learning and both types of states benefit.

## What are the strengths and weaknesses of MatCHIIM?

**Strengths:**

♦ It works
♦ It is free
♦ It can be customized . User has full control
♦ It is not a complicated system for either the user or the installer.
♦ It makes data accessible and available to a wide population
♦ It eliminates the need to request many types of special reports
♦ It is an empowerment tool
♦ It provides standardized outcome and performance measures for cross-state comparisons
♦ Because the technology involves the ability to link information across databases, the foundation for adding subpopulations is already in place
♦ It provides a comprehensive data picture for users
♦ It is transportable. The MatCHIIM staff is available to work with individual states in selecting the best composition of the platform and data engine
♦ User-log-on screens are an inherent part of the program.
♦ Users are informed about confidentiality issues

**Weaknesses:**

♦ It is home-grown. If more support resources are not continually put into it, it will be out-dated in five years

♦ It is SAS-based. Some states do use SAS. Although MatCHIIM supporters participate in a unique contract with SAS, users still need to pay the basic license fee. If an agency does not already use SAS, it may not be in its best interest to adopt MatCHIIM.

♦ The MatCHIIM grant ends in September, 2000. Issues surrounding the continuing support and development of MatCHIIM have not yet been resolved.

**Do demographic characteristics need to be entered only once in the MatCHIIM system?**

Demographic characteristics are actually not entered into the MatCHIIM system, but this information comes from linked population estimates files. It is necessary to link the files only once, so in a sense, the demographic characteristics are "entered" only once. All MatCHIIM data sets are pubic-use files. There are no identifiable individual elements.

**Beyond partnering with other agencies and states, what is next for Utah's MatCHIIM?**

Utah has had a vision of converting all health data collected into useful information and effectively providing

understandable health information to decision-makers (including within public health and health services agencies and outside). MatCHIIM is an important step toward that vision and we will continue to work towards it. The important aspect of MatCHIIM is not the technology, but rather the concept of using health indicators as building blocks to build a comprehensive health information system. That is, it uses the concept of an indicator to present a piece of understandable information about health. Using an indicator allows us to present health data in a context of what it is measuring, why that is important, and what is being done, and what should be done about it. Together the indicators serve as modules (which might also be considered to be building blocks) that are linked by the relationships among them, allowing us to present a comprehensive picture of health, including measures of health status and its determinants (risk factors, population characteristics, health care system characteristics and performance). We will continue working toward that vision. The technology and tools may change as may the names and acronyms.

For Nevada, the next step will be adding other health databases (the first steps will be to add mortality and UB92 data, followed by cancer registry and immunization with GIS modules) and the final goal is to establish an Interactive Health Data warehouse in Nevada which should include all major public health databases such as vital statistics, population, MCH, immunization, cancer registry, hospital discharge, Medicaid, BRFSS, trauma registry, and so on.

**Are the other national agencies or organizations fixed on maternal and**

**child health or could there be cross-pollination with immunization registries? How such cross-pollination work?**

HRSA and NCHS have been talking with NAHDO about expanding MatCHIIM. Although a direct link to immunization registry is not available at this time, it demonstrates a strong interest in establishing an "integrated" working relationship at the federal level. Currently, federal agencies are not only requiring states to work together on integration, but the federal agencies themselves are working together. This is an important message.

Immunization registry is a good place to start the integration process, but it is not the only place. Nevada and Maryland started with MatCHIIM and use the MatCHIIM project to bring partners together. As long as the "people system" is developed, integrating the registry in to the registry should not be difficult.

Although Utah does not get funds from INPHO II, the agency has made a made positive impact on the health department in Utah, particularly because the INPHO approach goes well beyond the registry-only mind set.

**Can you describe the process of linking databases utilizing MatCHIIM? Does it populate existing registries or does it also provide a probabilistic match for records already in the database to which the link is established?**

Utah registry has a match and de-duplication of SQLPlus program to populate the registry from vital records, WIC records. AutoMatch has not been used as a daily data processing software. MatCHIIM plans to receive updated linked file annually. At this moment, MatCHIIM and the Utah registry are two separate systems.

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